HORTICULTURAL DEPT.
AGR. EXPERIMENT STATION

The Citrus Industry
Issued Monthly
Representative of every Interest
Representing no special Interest

Vol. 12, No. 11 TAMPA, FLORIDA, NOVEMBER, 1931 15 Cts. A Copy

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ASSOCIATED PUBLICATIONS CORPORATION, TAMPA, FLORIDA, PROPRIETORS OF:
THE CITRUS INDUSTRY - - - - THE FISH AND OYSTER REPORTER - - - - BARTOW PRINTING CO.

THE SUCCESSFUL GROWER...
Is always looking Ahead!

Quality Fruit...
THE FINAL REQUIREMENT
Of these 3 Tests

1. The Auction Market
2. The Discriminating Purchaser
3. The Ultimate Consumer

QUALITY fruit... for the auction market ... the discriminating purchaser ... the ultimate consumer ... is the principal factor in bringing profitable returns to the grower under the present marketing conditions. Heavy, rich, juicy, sweet fruit will bring a real premium and the successful grower is looking ahead to supply the demand.

To produce such a crop the grower must use sound judgment in the selection of a scientifically balanced plant food for his grove. Alluring promises and glowing statements must not tempt him to experiment with new products and new brands. Only time-tested fertilizers can be relied upon under such conditions if profits are to be assured.

For the past thirty-nine years growers in every part of Florida have used Ideal Fertilizers. They have learned by experience that they are uniformly effective in producing large, rich yields ... that they contain the essentials for the proper tree and fruit nutrition so important in the fall application ... the application that restores to the trees the vitality expended in maturing the present crop and in conditioning them to withstand cold.

But while the grower looks ahead to his market for this year's crop, he must look even further. He must see his grove properly fertilized by the fall application ... the very foundation for feeding the following crop and for stimulating the spring bloom. If you are among the growers of Florida who are looking ahead we can be of service to you. We maintain a staff of field representatives to help in analyzing your fertilizer problems. They are at your service whether your needs are great or small. Ask them to inspect your grove and make definite recommendations.

The Extra Quality in perfectly balanced Fertilizer is your best assurance of Extra Quality in the crop you produce.

Here is a book that will interest you! It covers Fall Problems in the Citrus Grove and is by Bayard F. Floyd, Florida's leading authority on citrus culture. Write for a copy.

IDEAL *fertilizers*
WILSON & TOOMER FERTILIZER COMPANY
JACKSONVILLE ——— FLORIDA.

A Get-Together Program

A gentleman prominent in citrus circles, one whose efforts to stabilize markets and bring a suitable meed of prosperity to the growers have extended over a period of years, submits the following outline of a program for the consideration of the Florida Citrus Growers Clearing House Association and the Florida Citrus Exchange. The Citrus Industry sees in this plan much of benefit to the growers of Florida, and sincerely hopes that the suggestions may meet with the approval of the two organizations and bring about that harmony of effort which is so sorely needed in the citrus industry today. The plan suggested is given below in full:

In presenting this program for consideration, I want to assure you that the same has been formulated with a definite and sincere purpose of assisting the citrus growers of the State to the end that some of the difficulties now confronting us may be overcome and a true understanding be agreed upon. With reference to any agitation that may have existed between the Clearing House Association and the Florida Citrus Exchange, I do not think that we should refer to this past situation, and it is my thought that new details be worked out to a point of being successful in its operations.

FIRST: The Growers are interested in a Clearing House, as an organization that will function to help increease the growers' profits.

SECOND: The Clearing House should be considered, in my, opinion, from a standpoint of service to the shipper on a basis of giving him what he wants and letting him pay for what he gets, provided that in so doing they help the grower.

THIRD: A budget should be prepared showing the needs for all monies and general functions of the business. There should be an advertising assessment of 4c a box, which should be spent exclusively in advertising the health value of Florida citrus fruit under the brand or trademark of the shipper in such markets as designated by the shipper. This advertising should be done under the supervision of a capable advertising manager together with an office force, which, of course, would be paid out of the advertising retain mentioned above. I think there should be an advertising committee of three responsible shippers to work with the advertising manager on matters of policy pertaining to the advertising of Florida Citrus fruit. Some of the smaller shippers, who might care to come together and advertise in certain markets under one trademark, could do so and under this plan their names would appear at the bottom of the advertisement. This advertising committee of three shippers should be appointed by the Board of Directors of the Clearing House. The expense of advertising a shipper's own brands or trademark would be borne, of course, by the shipper so doing.

FOURTH: Compiling of market information and shipments, which information would be available to all shippers, who desire same, and such shippers, who receive such information, would be expected to pay for same. The expense of compiling this information should be paid by the Clearing House. The expense of getting the information from the Clearing House to the shipper must be paid by the shipper; in other words, the Clearing House could compile this information and if a certain shipper wanted a wire on same, wire should be sent. "Collect". The details of shipments, market information, etc., could be arranged for through the Department of Agriculture at a very nominal expense. In addition the Florida Citrus Exchange salaried representatives or American Fruit Growers or others would be glad to furnish information free—the Clearing House paying for the wires.

FIFTH: An arrangement should be made to handle prorating or control of shipments and price fixing, and control of sales in various markets, and a definite plan agreed upon by every shipper member and in addition ways and means found and agreed upon for enforcing such agreement. If prorating, control of shipments, etc., are agreed upon, this expense could be estimated and a retain for same be made so much per car to all members fruit.

SIXTH: I think we should eliminate a house organ and all organization expense, as the shippers would pay this. There will, of course, come up from time to time, policies and matters of importance to the industry, none of which should prove expensive, and if expensive and the industry needs the protection, they can assess a retain from time to time to take care of such expenses.

SEVENTH: If a Clearing House is properly set up and functioning in the interest of the growers, there can be no especial interest shown to any certain shippers and such a setup can be helpful to the industry in general, although it may not solve all of its problems.

EIGHTH: With the new Federal Marketing act, which fully protects the purchaser, the shipper could provide his own inspection; however should shipper desire the Clearing House to handle the inspection, such service could be provided and an assessment be made against such shipper receiving this service.

In conclusion I have made the statement many times to the effect that if persons interested in consummating a deal with each other desire to do so, that a way can always be found to accomplish same, and I wish to assure you that there is need of greater sincerity in the citrus industry in general than we have ever had before—in fact, it almost becomes a matter of saving the situation from chaos and ruin, and it is with this thought in mind that the above is submitted.

MANY BEES LOST EACH WINTER DUE TO LACK OF FOOD

Gainesville, Fla.—Many beekeepers make the mistake of taking the honey too close, and as a result lose large numbers of bees each winter, says R. E. Foster, apiary inspector for the State Plant Board.

Now is the time to look at the bees and see that every colony has plenty of honey. Mr. Foster reports that every spring while going over the state he finds that hundreds of colonies of bees have died during the winter. He attributes most of this loss to a shortage of food.

Because the winter months are not severe in Florida is not sufficient reason to expect the bees to work every day. When they are forced to do this and two or three cold days come along many die. Fifteen to 20 pounds of honey should be left in each hive at all times.

In cases where there is a shortage of honey Mr. Foster recommends a mixture of sugar and water, in equal parts. The best way to feed this is to take an empty super, without frames, and place on top of hive after removing the cover. Put some pine straw or excelsior in a dish and pour the syrup over it. The bees will do the rest.

Seald-Sweet

Mor-juce

OF COURSE

You Can Do Without It!

It is only human for a grower of long standing to think that the whole world is waiting, with mouths watering, for the excellent fruit he grows.

Often he claims with a kind of defiant pride: "I can get along without helping to organize this industry or cooperating through the Exchange".

Certainly you can—if you don't mind and are financially able to stand **constantly dimnishing returns.**

But why should you want to?

You can continue to gamble on prices determined by faulty distribution of the state's crop, by competition of other fruits and by inadequate consumer demand.

You can continue to pay packing profits and exorbitant sales commissions to speculative operators.

You can continue to constantly increase your production without the safety valve of thoroughly developed by-products and markets for them.

Many growers of commodities the country over do.

But the most progressive, most successful and most far-sighted growers don't.

Admitting that you can do without an organized industry; without joining the Florida Citrus Exchange—where is the gain in denying yourself and your neighbor the definite advantages which admittedly can be obtained under such conditions.

Where is the wisdom in sacrificing time and money in attempting to compromise with the inevitable— in trying make-shift substitutions f o r definite standards of production, postive control of distribution, adquate consumer advertising and control of prices in line with the intrinsic worth of the fruit you grow?

That is why you owe it to yourself, your industry and your state to put your shoulder behind the wheel and obtain the definite advantages of organization through a grower-owned, grower-controlled cooperative.

Florida Citrus Exchange

Tampa, Florida

The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
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Dedicate Laboratory For Citrus By-Products

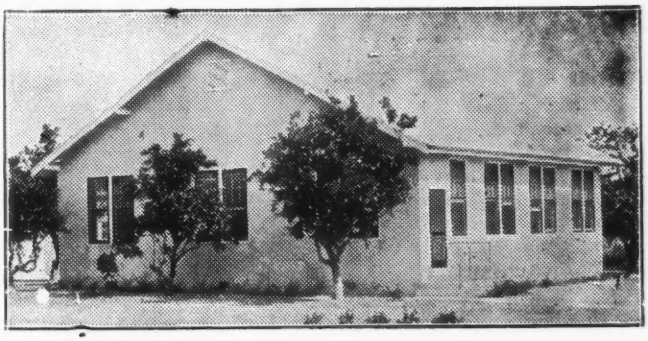
By Frank Kay Anderson

As representative a gathering of citrus men as has been had in recent years met in Winter Haven on October 23 for the formal dedication, and turning over to the United States Department of Agriculture, of the newly completed citrus by-products laboratory in that city.

All were gathered as the guests of the City of Winter Haven at a formal luncheon at the Haven Hotel, following which the laboratory was formally tendered to, and received by, officials of the U. S. Department of Agriculture.

The laboratory was made possible by a recent appropriation of Congress, put at the disposal of the Bureau of Chemistry and Soils of the Department of Agriculture. The federal funds providing, however, only for the operation and maintenance of such a laboratory, it was necessary for Florida to furnish the necessary site and the building to house the worker and equipment. This was accomplished by a public spirited Polk county man underwriting the proposal, so that an immediate beginning might be had as the time element was important. The necessary funds for the erection of a suitable building finally were obtained in equal parts from the Florida Citrus Exchange, the Florida Citrus Growers Clearing House Association and citizens of Winter Haven, each supplying one-third. The building site was donated.

Erection of the building was speeded up. The Department of Agriculture, drawing upon bits of spare equipment here and there at different stations, the installation of equipment followed fast upon the work of the erectors, with the result the new laboratory is ready to begin operations coincident with the movement of this season's crop, and the governmental requirements with respect to the time of opening have been fully complied with.



New Citrus By-Products Laboratory at Winter Haven

Invitations to attend a luncheon and the formal dedication were responded to by many of the state's foremost citrus leaders from many sections. Beginning at one p. m. a satisfying luncheon was served in the dining room of the Haven Hotel, which was opened especially for this event.

After the luncheon Judge Allen E. Walker of Winter Haven, chairman of the Winter Haven committee, following a welcome by Mayor O. P. Warren of the city, introduced Congressman H. J. Drane of Lakeland, who later presided and introduced the various speakers.

Leslie B. Anderson chairman of the Ways and Means committee of the Winter Haven chamber of commerce formally tendered the new laboratory to the United States Department of Agriculture officials who

(Continued on page 21.)

Fertilizer Recommendations For Florida

The Florida College of Agriculture, through the committee named below, has issued fertilizer recommendations for the various crops and soil types of the state. The recommendations for citrus are presented herewith:

The Committee Report

Report of the College of Agriculture Committee on Uniform Fertilizer Recommendations, consisting of the following members of the Resident Teaching, Experiment Station and Agricultural Extension Divisions:

W. L. Floyd, E. L. Lord, H. G. Clayton, E. F. DeBusk, W. E. Stokes, M. R. Ensign, H. H. Hume, O. C. Bryan, J. Leo Smith, R. W. Ruprecht, A. F. Camp, Wilmon Newell, S. T. Fleming, A. P. Spencer, W. T. Nettles, R. M. Barnette, G. H. Blackmon.

Citrus Fertilizer Recommendations

Local conditions, such as moisture, soil type, cover-crop, variety, rootstocks, etc., play an important part in the behavior of citrus trees toward fertilizer treatments. Therefore, the fertilizer recommendations herein set forth are subject to local modifications.

Organic Matter

Most citrus soils in Florida are low in organic matter. Moreover, it is generally recognized that organic matter increases the efficiency of the fertilizer as well as improves the quality of the soil. Therefore, the committee recommends that at least three tons (dry weight) of coarse organic matter, in the form of cover-crops (or hauled into the groves), be applied to each acre of grove soil annually.

Fertilizer Nutrients

Chemical analysis shows that the average Florida Citrus soil (virgin) is low in the essential fertilizer nutrients—nitrogen, phosphors, and potassium. Citrus production has been obtained by adding these elements to the soil from time to time.

Nitrogen Sources:

Inorganic Sources of Nitrogen: Sulphate of ammonia and nitrate of soda have been used most extensively and have given satisfactory results.

Newer Sources of Nitrogen: The newer sources of chemical nitrogen have not been tested as extensively or for as long a period, but indications are that the following may be recommended for further trial by the growers: urea, nitrate of lime, urea-nitrate of lime, nitrate of potash, nitrate of soda potash, ammonium nitrate sulphate.

Organic Sources of Nitrogen: Under tests certain single sources of organic nitrogen have not been as efficient as sulphate of ammonia and nitrate of soda. However, organic sources in combination with inorganics have been extensively used, and may be used where prices and conditions justify.

Sources of Phosphoric Acid:

Superphosphate has been the most satisfactory source of phosphoric acid under ordinary grove conditions. Other sources of phosphates may be used for trial by the grower when the delivered unit price is in keeping with economic practices.

Sources of Potash:

High grade sulphate of potash has been the most commonly used source of potash under average grove conditions, but muriate of potash seems practically as good so far as it has been tested. The following sources of potash are recommended for further trial by the grower—nitrate of potash, nitrate of soda potash, and sulphate of potashmagnesia.

Ratio of Fertilizer Nutrients

From an analysis of citrus fruit and trees, a ratio of 41-5 (NH_3-P_2O_5-K_2O) would take care of crop needs. But due to the differences in availability and absorption of the nu-

FERTILIZER RECOMMENDATIONS FOR BEARING CITRUS GROVES*
(Each of the following programs is complete within itself)

Mixed Fertilizer Program

Time of Application**	Kind and amount of fertilizer materials and mixtures to be applied per foot of tree spread (or diameter of top).
SPRING Jan.-Feb.	(1 lb mixed fertilizer, 5-6-3, or its equivalent
SUMMER April-June	(1 lb 4-6-8 or equivalent to trees under 10 years old (1 lb 4-6-10 or equivalent to trees over 10 years old
FALL Oct.-Dec.***	(1 lb 4-6-5 or equivalent to trees under 10 years old (1 lb 4-6-8 or equivalent to trees over 10 years old

Materials Program

Time of Application	Kind and amount of fertilizer materials and mixtures to be applied per foot of tree spread (or diameter of top).
SPRING Jan.-Feb.	(¼ lb nitrate of soda or (1-5 lb ammonium sulphate — Organic nitrogen may be used when justified by prices and conditions. For further trial by growers (¼ lb nitrate of soda-potash or nitrate of lime (1-8 lb urea-nitrate of lime, or 1-12 lb urea, or equivalent amounts of materials recommended for trial.
SUMMER April-June	(a) Repeat the spring application of nitrogen, reducing the amount 10-20% where spring cultivation is practiced and 20-30% following a heavy legume cover-crop. (b) 1 lb superphosphate (16%) or the equivalent. This may be reduced 50% in groves over 20 years old. Other sources of phosphorus may be used when justified by delivered unit price conditions. (c) 1-6 lb sulphate or muriate of potash to trees under 10 years of age. 1-5 lb to older trees or trees believed to need more potash. Other potash materials may be used in equivalent amounts.
FALL Oct.-Dec.***	Repeat summer application (a) and (c)

Modified Program

Time of Application**	Kind and amount of fertilizer materials and mixtures to be applied per foot of tree spread (or diameter of top).
SPRING Jan.-Feb.	(Use spring application in Material Fertilizer Program.
SUMMER April-June	(1 lb 4-8-8 or equivalent to trees under 10 years old (1 lb 4-8-10 or equivalent to trees over 10 years old
FALL Oct.-Dec.***	(Same as summer application.

Notes:
* For trees 1 to 6 years old reduce the regular fertilizers from 30% to 5%, respectively. On heavy hammock the total amount of plant food may be somewhat reduced.
** For each program of fertilizer practices, apply 1-2 to 3-4 the spring application of nitrogen in August or September to non-bearing trees, and to trees showing the need of nitrogen, and where a heavy non-legume cover-crop has been turned into the soil.
*** Fall application of fertilizer may be reduced or even omitted in northern part of citrus belt or where conditions seem to justify the practice.

trients by the soil, especially phosphates, the above ratio of fertilizer nutrients has not always been satisfactory. This is especially true with heavy soils with a high phosphate fixing power. On the other hand recent studies show that the sandy soils of the citrus belt have a low phosphate fixing power, but a high retaining power for phosphate, and it is not necessary to add a high proportion of phosphate in the ferilizer as is the case on the heavy clay soils, or loams of other sections of the country. In many instances the results indicate that a ratio of 12 phosphoric acid to 1 of ammonia would supply all the phosphorus needs of old groves on the sandy soils of the citrus section. With all angles considered it appears safe to add a ratio approximately 11-1¼ (NH3-P2O5-K2O, respectively).

It is the usual practice to apply fertilizer to citrus according to the age and bearing capacity of the trees. This practice, however, is subject to criticism, because of the irregular bearing habits of trees, as well as the differences in size of the trees due to variations in soil, rootstock, etc. Recent studies show that under ordinary conditions the spread of the tree or the tree size would be a more correct index of tree needs than age and bearing capacity. So the recommendations suggested herein base the rate of application on the actual tree spread (diameter of top). This amounts to approximately .13 of a pound each of ammonia, phosphoric acid and potash per foot spread of tree. Preliminary field measurements show that this compares favorably with grove practices.

For a large part of the citrus belt experimental results and field observations indicate that the most reliable results can be obtained under general conditions with three applications of nitrogen per year — spring, summer, fall. But due to the retaining power of the soil for phosphates and potash, there is apparently little to be gained by adding the phosphoric acid and potash three times per year.

Method of Application

The fertilizer should be applied evenly over the soil surface, as far as the roots extend.

PLANT DILL SEED NOW

Gainesville, Fla.—Dill seed should be planted between now and early December, according to Dr. E. W. Berger, an authority along that line.

The seed should be sown thinly in drills that are a foot or more apart, and later shoud be thinned to three or four inches apart.

The Citrus Fruit Situation In Union of South Africa

The citrus fruit season is nearly over in the Union of South Africa. Total shipments to October 9, as reported by C. C. Taylor, Agricultural Attache at Pretoria, amounted to 1,734,000 boxes as compared with 1,890,000 boxes to the same date in 1930 and 1,144,000 boxes in 1929. The largest shipments are made during the period June-September, with the season opening about the first of May and closing the last of October.

Monthly shipments during the season have been more uniform than in previous years. This was due principally to unusually heavy rains in July, which prevented the picking of mature fruit and delayed the maturing of other fruit, combined with the fact that early shipments were somewhat postponed in the hope of receiving better prices at a later date. Frost damaged the citrus crop in the Kat River Valley in Eastern Cape Province in July, which is unusual in South Africa, while at Umtali, Southern Rhodesia, the first injurious frost in 14 years occurred. Shipments were not delayed on this account, it is said, but fruit on the trees was injured to the extent of making 20,000 cases unfit for exports. Two orchard heaters have been ordered for experimental purposes from California, which will be the first introduction of smudge pots into South Africa.

Local markets are of increasing importance to citrus producers in South Africa. In 1924 there were 658,146 cases of oranges and 3,530 cases of grapefruit sold locally, while in 1925, these figures increased to 875,552 cases of oranges and 4,108 cases of grapefruit, and in 1926, to 1,202,998 cases of oranges and 55,862 cases of grapefruit. The Western Province Citrus Exchange, established at Pearl three years ago, sells practically all of its fruit on the local markets, where better prices were obtained last season than from overseas shipments.

SOUTH AFRICA: Shipments of citrus fruits, season 1930-31 by months, with comparative total for 1929 and 1930

Month	Oranges	Grapefruit	Tangerines	Lemons	Total
	Boxes	Boxes	Boxes	Boxes	Boxes
April 24-30	462				462
May	52,331	20,072	1,573		103,976
June	356,897	38,966	8,998	425	405,286
July	304,023	35,681	4,240	1,466	345,410
August	314,638	27,646	1,100	1,856	345,240
September	348,604	15,315	688	646	365,253
October 9	164,000	3,000	129	600	168,000
Total to Oct. 9, 1931	1,571,000	141,000	17,000	5,000	1,734,000
Total to same date 1930	1,771,000	105,000	14,000		1,890,000
Total to same date 1929	1,050,000	84,000	10,000		1,144,000

South African Season Being Lengthened

According to Mr. Taylor, efforts are being made in South Africa to lengthen the citrus fruit season. It is hoped that oranges may be brought on the market as early as March, and that the season may be extended to February. In the first case, it has been found that by treating Navel oranges with ethylene gas they may be marketed much earlier. Chambers are being installed for this purpose at several packing houses, and the fruit thus artificially colored, has been found of sufficient juice and sugar content to be used on local markets in March, when the supply is at low ebb. At the other end of the season, it has been found that Navels may be left on the trees for picking during November and December and Valencias may be left until January. Out-of-season fruit is not unusual in the Transvaal. Sometimes there is little rain in September and an abundant supply in November. Unless irrigation and fertilization have been used, this causes a light bloom in September and a second blooming in November or even later. This out-of-season fruit has been removed in the past to promote the growth of the regular crop and as a means of controlling fruit fly and other pests. However, it is this out-of-season fruit which might be left on the trees to supply the home markets with later fruit and should it be found practicable to do this, it is probable that local consumption of oranges would increase to such an extent that exports would be proportionately decreased.

Prices

The average price received over-

(Continued on page 26.)

The Food Value of Oranges and Grapefruit

By D. Breese Jones, Principal Chemist Protein and Nutrition Division

The importance of oranges and grapefruit as American food articles is strikingly shown by the rapid growth of their production and consumption in the United States during recent years. The production of oranges in seven States in 1930-1931 amounted to over 50,000,000 boxes, and 16,500,000 boxes of grapefruit were produced during the same season in four states. The farm value of oranges produced during the season 1929-1930 in the United States amounted to $100,447,000, and that of grapefruit was $26,142, 000 (1).

The desirability of having available information relative to the food value of any article which occupies as prominent a position in our dietary as do oranges and grapefruit is obvious. It is the purpose of this article to present in a summarized form some of the more important data regarding the food value of these two citrus fruits.

In order to satisfactorily meet all the nutritional requirements of an animal a food must supply material in sufficient quantity and satisfactory quality to provide for the growth and maintenance of body tissues, the normal functioning of all physiological processes, and the necessary energy for the activities of life. As far as known, these requirements are provided by protein, fat, carbohydrate, mineral salts, and vitamins. No single natural food adequately supplies all these factors, hence the importance of variety in the diet. Oranges and grapefruit are particularly important as sources of vitamins and mineral salts. There content of protein and fat, as shown in Table 1, is so low as to be relatively of little consequence in nutrition.

Table 1 shows the proximate composition of oranges, orange juice, grapefruit, and grapefruit juice. (2) The data refer to the constituents of the edible portion, but are calculated as percentages of the "as purchased" weight. The percentages given are the averages of a number of determinations.

Analyses of both California and Florida grapefruit published by Zoller (3) are in close agreement with those given in Table 1. No marked differences were noted in the composition of Florida and California fruit.

There is contained in the white peel and membranes of the grapefruit a bitter glucoside, Naringin. (4) So far as known, it has no food value. This product decreases in amount with the maturity of the fruit.

Vitamins

The importance of vitamins in nutrition is so generally well known as to require here no detailed discussion. Fruits and vegetables are among the best natural sources of vitamins. Prominent among them are the citrus fruits. Although oranges and grapefruit contain vitamins A and B, their chief value lies in their high vitamin C content.

Vitamin C. This vitamin, also known as the antiscorbutic vitamin is active in the cure and prevention of scurvy. It also plays a part in bone and teeth development. From many points of view, orange juice is the most valuable antiscorbutic. It has a high content of vitamin C, it is easily and conveniently prepared, and is palatable. Under normal conditions oranges are relatively cheap and plentiful. The orange is a fruit of great importance in clinical medicine.

Vitamin C is contained mostly in the juice, the orange containing somewhat more than the grapefruit. Modern investigators (6, 7, 8, 9) have demonstrated that 1.5 c.c. of orange juice or 8 gms. of grapefruit will supply enough vitamin C to protect a guinea pig from scurvy.

It is recognized by pediatricians (10) that infants fed many of the artificial food mixtures, are likely to develop scurvy. The addition of orange juice to avert this difficulty is quite generally practiced. Fifteen cubic centimeters daily of orange juice is considered the antiscorbutic dose.

A number of investigators have studied the influence of vitamin C on teeth, (8, 10, 11, 12, 14, 15, 16 17) and it is generally agreed that the antiscorbutic vitamin has a definite influence on the structure and preservation of teeth. Methods have been proposed and used for the qualitative assay of this vitamin based on the claim that the teeth show specifically in three weeks or less the absence of an adequate amount of vitamin C in the diet. Disturbances in tooth structure occur. The true dentine is reduced. It appears that tooth protection demands more antiscorbutic than does the prevention of external symptoms of scurvy. Eddy (8) states that "if tooth health is so directly related to vitamin C content of diet as these studies imply, we must not only give more antiscorbutic, but greater quantities for tooth health alone." Hanke (18) found in studying 100 cases afflicted with dental disorder that the diets were not greatly lacking in vitamin D, but that 40 per cent were markedly deficient in vitamin C. Howe (14) has also emphasized the importance of an abundance of vitamin C in the diet for the production of solid gum tissue, the arrest of caries, and inducement of bone regeneration in the alveolar tissue.

Vitamin A. Vitamin A is present in significant quantities in oranges, both in the peel and in the juice. When vitamin A was first detected in orange juice the quantity present was rather underestimated. It has been shown (6) that the juice of fresh ripe California oranges, when carefully collected and used, contains

Table 1.—Composition of Oranges and Grapefruit

	Water	Protein N X 6.25	Fat	Ash	Total Carbohydrate	Fiber	Invert Sugar	Citric Acid	Fuel Value Per 100 gms.	Fuel Value per lb.
	%	%	%	%	%	%	%	%	calories	
Grapefruit. (Av. of several varieties)	88.8	0.5	0.2	0.42	10.1	0.3	6.5		44.2	200
Grapefruit juice (Florida grown)	90.1			0.4			6.65	1.42		
Grapefruit juice (California grown)	89.3	0.4	0.1	0.4	9.8		7.03	1.77	41.7	190
Oranges. (Av. of several varieties)	87.2	0.9	0.2	0.47	11.2	0.6	8.65	0.78	50.2	230
Orange juice (California grown)	85.7	0.6	0.0	0.58	13.1		9.14	1.28	54.8	250

much larger quantities of this vitamin than previously supposed. Osborne and Mendel showed that 10 c.c. daily of orange juice was adequate for the vitamin A requirements of the rat. Willimott (19) found that 5 c.c. of navel orange juice were sufficient.

Orange rind oil is an exceptionally rich vegetable source of vitamin A, comparable with some of the most potent animal sources. Morgan (20) found that orange peel oil obtained by ether extraction and by cold pressure contained this vitamin in quantities not far from that present in fresh commercial cod liver oil. Oil from fruit that had hung on the trees for several weeks after reaching maturity was practically devoid of vitamin A, while a fourth sample obtained by steam distillation was also valueless. Dried outer peel in doses of 0.5 to 1 gm. (single dose) was effective in curing xerophthalmia.

The grapefruit contains practically no vitamin A either in the juice or in the rind, and is of slight value as a source of this vitamin.

Vitamin B. Both the orange and grapefruit contain considerable amounts of vitamin B. According to Willimott, it is concentrated mainly in the flavedo, the outer pigmented part of the peel. He found that 2 to 3 gms. of orange flavedo or 1 gm. of grapefruit flavedo was enough to supply the vitamin B requirements of the rat. This, however, has not been fully confirmed. Osborne and Mendel (22) found that fresh orange juice contains about the same amount of vitamin B as does the same volume of milk, 10 to 15 c.c being found adequate for the rat. Other investigators (23, 19, 24, 25) have found practically the same value.

Vitamin D. No evidence of the presence of vitamin D has been found in either oranges or grapefruit.

Orange and Grapefruit Products

Orange juice and grpefruit juice can be concentrated either by evaporation in vacuo or dehydrated by the spray process and still retain to a high degree the vitamin activity of the original juices. Disiccated orange juice has been found to be effective as an antiscorbutic from two to five years after dehydration. (26, 27) On account of the lability of vitamin, C until special precautions are taken, this vitamin may be lost entirely if the juice or a product made from the juice is subjected to heat treatment or stored for long periods.

Both orange and grapefruit juices desiccated by concentration in vacuo show the same vitamin B potency as equivalent portions of fresh juice. (22) and the vitamin A of the orange juice suffers little or no loss.

It has been found that commercial, canned grapefruit compares very favorably with the fresh fruit as regards its vitamin C content. The destruction of this vitamin resulting from the canning process has been estimated not to exceed 10 to 15 per cent. Two grams of fresh grapefruit were found adequate to protect guinea pigs from scurvy, whereas the protective dose of the pulp and the liquor in the canned product was 2.2 c.c. (9).

Commercial and homemade orange marmalades and crystalized orange peel have been tested for their vitamins A and B potencies. (28) Upon a 3 gm. daily intake of the commercial products, rats failed to recover from symptoms of vitamin A deficiency. The animals fed a similar quantity of the homemade products, however, made fair increases in weight and regained nearly normal eye conditions. The total time of boiling and the temperatures reached in the preparation of the homemade products were less than in the case of the commercial preparations, which doubtless accounts chiefly for the higher vitamin content of the homemade products. The same general results were observed when these products were tested for vitamin B.

As a result of a two year study which has recently been completed by the Bureau of Chemistry and Soils, it has been definitely established that arsenical sprays reduce the vitamin C content of orange juice, together with the effect of storage under various conditions, are now in progress. The present indications are that freezing alone does not materilly decrease the vitamin content.

Mineral Constituents

Fruits contribute to the diet significent quantities of mineral elements which are necessary for the growth of the skeletal parts of the body. Mineral elements also play an important role in the proper physiological functioning of many of the body tissues and organs.

The ash yielded by incineration of the edible portions of oranges and grapefruit varies from 0.4 to 0.5 per cent of the weight of the fresh material. Table 2 shows the ash constituents expressed in percentages of the edible portion. (29)

Table 2.—Ash Constituents of the Edible Portion of Oranges and Grapefruit

	Oranges	Orange Juice	Grapefruit
Calcium	0.045	0.029	0.021
Magnesium	0.012	0.011	0.009
Potassium	0.177	0.182	0.161
Sodium	0.012	0.008	0.004
Phosphorus	0.021	0.016	0.020
Chlorine	0.006	0.003	0.005
Sulfur	0.011	0.009	0.010
Iron	0.0002	0.0002	0.0003

Another important though less appreciated dietetic value of oranges and grapefruit, oranges particularly, consists in their content of basic mineral elements. In health the tissues of the body are slightly alkaline, and a condition of what is called alkaline reserve is maintained. A slight departure from this condition to the acid side causes serious consequences. Certain foods, such as meats, eggs and cereals, when taken into the body and oxidized yield acid-forming products which tend to reduce the alkaline effect, and thus tend to increase the alkaline reserve. Most fruits and vegetables belong to the second class of foods. Although such fruits as citrus fruits taste sour and contain certain organic acids, they yield products when burned which are strongly alkaline and are, therefore, alkali-forming foods. This is because they contain certain basic mineral elements such as potassium, magnesium and calcium in excess over the acid-forming elements. Oranges are particularly valuable as an alkali-forming food, both because they possess a preponderance of alkali-forming over acid-forming constituents and also because of their availability at all seasons, their palatability and their tolerance by persons having weak digestive powers. For these reasons orange juice is frequently prescribed for infants and invalids when the need of increased alkalinity in the system is indicated.

Carbohydrates

Because of their low fat and carbohydrate content as compared with many other food articles, oranges and grapefruit do not have a high fuel value, that of oranges being somewhat higher than that of grapefruit, as shown in Table 1. Myers and Croll, (30) in a special study of the available carbohydrates in a number of fruits and vegetables mostly used in feeding diabetic patients, found the values for oranges and grapefruit as given in Table 3.

Table 3.—Carbohydrates in Oranges and Grapefruit. (Free sugars are expressed in terms of glucose.)

	Reducing Sugar	Non-reducing (Glucose)	Total Sugar
	%	%	%
Grapefruit	7.28	1.35	9.63
Cuban	5.23	3.72	3.95
Grapefruit, Orange, Florida	5.01	4.57	9.58
Orange, California	6.08	8.10	14.18
Orange juice	2.70	4.08	6.78

Protein

Little is known regarding the nitrogenous constituents of the citrus fruits. Although the percentage of

(Continued on page 20.)

The Citrus Industry

with which is merged The Citrus Leaf

Exclusive publication of the Citrus Growers and Shippers

Address all communications to the Main Office
1123 Florida Avenue
Tampa, Florida

Telephone ——— 4819

Published Monthly by
ASSOCIATED PUBLICATIONS CORPORATION
Tampa, Florida

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Subscription, $1.00 per year in advance

Entered as second-class matter February 16, 1920, at the post-office at Tampa, Florida under the act of March 3, 1879.

Branch office and production plant, Bartow, Florida.

NEW YORK OFFICE
118 East 28th Street
Edwin F. Ripley, Manager

CHICAGO REPRESENTATIVE:
Joe Esler, 5434 Glenwood Avenue
Telephone—Long Beach 3429

ENCOURAGING SIGNS

Two encouraging developments during the past month have given rise to a better feeling and hope for better things in the citrus industry of Florida.

The first of these was the anouncement coming out of Orlando heralding the merger of the Fruitmens' Association with the Florida Citrus Growers Clearing House Association. The second was the later announcement by the Florida Citrus Exchange that under certain conditions that organization would favorably consider rejoining the Clearing House Association, from which it withdrew some months ago.

Apparently, the merger of the Fruitmens' Association with the Clearing House is complete with no strings or conditions attached, other than the signing up of the individual members of the former association in the latter. The merger of these two organizations gives the Clearing House control of a large portion of the Florida citrus crop. It is certain that the Clearing House with the Fruitmens' Association membership added, now controls a very considerable portion of the crop, and numbers among its membership many of the important factors in the industry. With such a percentage of control, the Clearing House should be in position to show greatly increased efficiency. However, it is conceded that to attain maximum efficiency, the Clearing House should have control of eighty or ninety per cent of the crop.

The one thing which stands in the way of this achievement is the lack of affiliation of the Florida Citrus Exchange. For this reason, any proposal of the Exchange to renew its affiliation with the Clearing House is of the utmost moment and affords an encouraging note which has been lacking in citrus circles for many months past.

While it is improbable that the Clearing House could accept all of the proposals suggested by the Exchange as essential to its renewed affiliation with the Association, the fact that the Exchange has opened the door to a renewal of negotiations is in itself an ecouraging factor, and should lead to a resumption of "conversations" which may result in bringing the two organizations together. For the welfare of the industry, it is to be hoped that such a consummation may be speedily achieved.

FERTILIZERS AND ECONOMY

Unfavorable prices for citrus fruits during the past few years have led many growers to seek means and methods of reducing the cost of production. In most cases the first thought in the minds of growers has been to economize on fertilizers, this being one of the chief sources of cost in the production of citrus fruits.

The Citrus Industry has no quarrel with this effort to minimize cost of production. Indeed, such reduction appears to be imperative if profits are to be secured from the operation of citrus groves. However, we do seriously question the wisdom of the practice which would economize (?) either on the amount or the quality of the fertilizer needed to produce good crops of quality fruits. Experience has proven that good fruit cannot be produced without proper fertilization, and the grower cannot hope to realize a profit on anything other than good fruit.

Attempts to economize by reducing the amount of fertilizers have proven costly in the extreme on many Florida groves. The trees **must** have proper plant food in order to thrive and to produce quality fruit. Equally disastrous have been some attempts to economize (?) by mixing one's own fertilizer. The latter practice might prove effective and economical, provided the grower has the knowledge, the equipment and the industry to mix his fertilizer as economically, as unformly and as efficiently as the commercial manufacturer. But until the grower is possessed of these requirements we greatly fear that he had much better depend upon the manufacturers whose formulas have proven satisfactory in Florida grove practice for the past two score years, than to take the chances of damaging a valuable grove through the application of improperly prepared fertilizers of home manufacture.

A grove is unlike a truck patch. It is not planted every year. Once in the ground, it is there for a lifetime if properly cared for and protected. The grove owner cannot afford to take chances on untried methods, unless he is prepared to take a loss. Experiments are a good thing and should be encouraged, but they should be confined to a few trees, or at most, to a small area, until such time as their effectiveness and safety have been proven over a period of years. Until time has demonstrated such effectiveness and such safety, we believe that it would be the part of wisdom for growers to continue the practice of methods and formulas which have been tried and proven and which have become a recognized part of grove practice in Florida.

In the matter of grove practice, we subscribe heartily to the old saw, that it is "better to be safe than sorry."

Texas is going after the mid-west grapefruit market with a vim. That state is going to be an important factor from now on.

CITRUS COMMENTS

—BY—

Charles D. Kime, Orlando, Florida

This department is devoted to furthering horticultural interests of Florida. Letters of inquiry, discussion or criticism will be welcomed

Under date of October 1, 1931, there was issued from the State Agricultural College at Gainesville a very important fertilizer report. It comprises ten pages of reprint material and is in loose leaf form. It is titled "Fertilizer Recommendations for Florida".

The following comments on the "set-up" represent a grower's reaction, and the reaction of a member of the Extension Division.

The College of Agriculture is distinctly a teaching organization and is well able to assemble and present to the citrus producers of the State information on fertilizing or other growing problems. The Agricultural College is further empowered to investigate agricultural problems on its own initiative and to present the results to the public through scientific magazine publications, bulletins or press notices. The spread of valuable information through the State is largely through the efforts of the College. In the case of the "Fertilizer Recommendations for Florida" the College is to be commended for its initial attempt to pull together the fertilizing information in the State into a unit that while short is surprisingly complete in detail. In spite of its shortness and absence of details, the report is the most valuable document the citrus grower has ever had in that it points the way toward lower production costs for citrus.

The College conferred with the Agricultural Extension Division and the Experiment Station in working out the final draft of the recommendations, so that the result is a joint summary approved by all. This fact increases its value and importance to the State.

The plant food sources recommended are all well known standbys of ancient lineage, while the ones recommended for trial are those referred to as of rather recent origin. But, due to a lack of detailed distinction, the differences will certainly prove confusing. It would not be at all difficult to make out as good a case, for example, for the use of nitrate of lime, nitrate of potash and artificially (one might say) synthetically manufactured nitrate of soda as for the forms of natural nitrate of soda and by-product sulphate of ammonia, referred to. The evidence for the use of these last two is no better and no worse than for the others. One can get in trouble just as seriously with them as with several of the others if they are misused.

Organics are covered briefly on a price basis. This seems a most excellent way of covering a multitude of good materials where briefness of the recommendations is so important. Due, however, to the impossibility of growing cover crops (6 tons per acre referred to) in many groves it would be in order that an occasional application of some organic be recommended more definitely for such locations.

The ratio of Fertilizer Materials is a broad and perplexing question. It is tied in with too many factors to be disposed of on the basis of a fruit analysis or a tree analysis. Such an assumption is bound to be misleading as it takes the wrong base for what is actually a rather satisfactory conclusion until more definite conclusions can be reached. We will be a long time arriving at any satisfactory basis for a fertilizing ratio for citrus. Tree growth, fruit growth from bloom to maturity, maturity quality, bud formation, fruit setting, may or may not be best served by a recommended ratio. We know that no definite ratio is proving continuously satisfactory at present so we can pretty safely conclude that any definite ratio is wrong to start with. On the other hand, we also have a preponderance of evidence to show that nitrogen, when allowed to accumulate unbuffed with sufficient potash, will cause trouble. The ratio suggested for potash, because of Florida soil conditions, may and probably is actually too low, i. e. 1-1-1¼. The phosphorus requirement, as stated in the materials table, seems entirely adequate though with increased knowledge on bud formation and fruit maturity the time of application may be varied. Tree size has long been taken for granted by the grove owner. If the trees were twelve years old they were spoken of as of that size. In reality, they might be only eight or ten year size, being somewhat stunted for their age. It is an excellent change to base the application at so much per foot of the diameter of the tree top. This places the twelve year tree having only eight year size in its proper class. It is much better than a box estimate.

Taken as a whole, there is plenty of material in the Fertilizer Set-up to call for careful study and analysis on the part of any of us. Any of the Departments at Gainesville or "The Citrus Industry" will be glad to answer inquiries on the "Set-up".

The following comments on the "set-up" represent the reaction of Mr. K. C. Moore, County Agent in Orange County, Florida.

"I consider this signed report of the College of Agriculture Committee on Uniform Fertilizer Recommendations a distinct advantage to the general farmer, the truck farmer, and the citrus grower. It certainly is backed by the best qualified group of disinterested men in the State. They are all men of integrity. Each one of them holds the highest rating in Florida in his special line.

"It is a point that should be brought to the attention of the public generally that this committee has worked consistently on these recommendations since last April, and that every item included had to pass the test of "substantiating evidence". Opinions, theories, and short experiences were not acceptable to the committee.

"In reference to the citrus fertilizing section, one of the outstanding new recommendations relates to the quantity of fertilizer per tree. A tree's growth as represented by the spread of its top is a fair index of the quantity of fertilizer it can make profitable use of. Our old system of basing the amount on age of tree

(Continued on page 18)

IMPRESSIONS

By the Impressionist

Denial by the Interstate Commerce Commission of the railroads' plea for a general advance of fifteen per cent in freight rates came in about the manner we forecasted. The old saw of a prophet being unforgiveable when he proves to be correct will not apply against us in this instance, at least not with the growers and shippers.

There will be some later increases in rates upon a few products, but, Jerry be praised, fruits and vegetables will be safe from the further and immediate raise, except for a possible raise of one cent per hundred pounds on citrus fruits, cabbage and tomatoes which, however, seems unlikely because of condition prescribed.

The railroad management might find some food for thought in studying the career of W. W. Hiley, Orlando, who in season operates a truck regularly between Orlando and the city of Washington, 1290 miles by the route he travels, carrying citrus fruits northbound and assorted cargoes southbound. He makes a round trip each week, taking two days upon the road each way; and has become just as much a regular transportation feature as the Palmetto Limited. This cracker boy is now a real bsiness man in his own right. Who knows but what, if the regularly constituted transportation agencies had not presented him with a ready made opportunity, he might be working for some big corporation, maybe as a brakeman.

And now comes the St. Johns River Transportation Company with a brand new, and much bigger, boat added to its river fleet. Kelly Tresher and his boys butted in on the St. Johns River when in their opinion the Clyde Line was operating too cumbersome and too costly service there. By dint of economy they were able to sell transportation more cheaply, and, combined with their trucks, at the same time give better and more complete service. So now the Clyde Line has been out of the river trade for several years; and the Treshers' business grows apace. Nor have they a monoply, for others are pushing them constantly.

Testifying against this proposed fifteen per cent raise in rates, J. S. Crutchfield said in effect that transportation is a commodity, and must be sold as such, at its current market value. The history of transportation confirms that statement.

And history insists upon repeating itself. Recent protests by the rail lines against allowing the use of public highways for general truck hauling find earlier parallel in the protest of some of the big stage line companies around 1840-60 against the giving of public land grants to subsidize the building of railroads.

It is one of the inevitable hazards of publishing that errors somewhere along the line may make one say in print something never intended. We had an instance last month in these columns. We read in print concerning Nathan Mayo's "action to stimulate maturity of fruit." Now as originally written it specified, his "action to prosecute those using sprays of certain character to stimulate the maturity of fruit." The linotyper's accidental omission of nine words (a typewritten line) following the word "action" got us all mixed up. Sure we caught it, just like you did—too late.

Remembering, however, that there are considerably more than a million chances for error in a single printed column of ordinary newspaper length, the only wonder is that we do not have more errors.

No, it was not we who figured out that number of chances. It was one of them there Statisticians, you know; one of those guys who figures that if all the Florida citrus growers now able to pay their grocery bills promptly were laid end to end they would reach from the state capitol almost out into the middle of the street on the north side of said capitol, etc. etc.

That was certainly some citrus gathering at Winter Haven on October 23. We shook hands until we began to appreciate why Coolidge cut out the hand-shaking feature at presidential receptions.

Naturally we expected Winter Haven's offer of a free meal with Secretary Hyde for company to draw a great many, but hardly so many as came, and from such widely scattered sections.

Just north of Haines City, en route to the gathering, a big car almost ran over us. We figured its speed at 94 miles an hour; but when we saw it bore a load of Scotchmen from the Plymouth Citrus Growers Association, headed by William Edwards, we forgave the incident. Prospect of a free meal to the Scotch, and a commendable aim to be on time and miss nothing on the menu.

Bob Carlton, who was driving the car in question, says this is a lie. That the car persisted in heating up, and that he couldn't get it going over ninety.

Waiting for the Haven's dining room doors to open, J. Reed Curry said something about anticipation being the best part of anything. Right away we cracked back, "Oil wells, too?" And got a grin out of Reed. For away back yonder J. Reed and ourself were in an oil well together; and we mean "in" an oil well. However, there turned out to be oil in our well; think it had four quarts daily flow or something like that; and we sold out for enough to get our money back. That is, we believe, a lot better than the average citizen's oil well experience.

Talking to O. F. Gardner, the well known Lake Placid grower, following the big event, we mentioned his recent famous exploit in which as a member of the sheriff's posse he shot and captured one of the Lake Placid bank robbers. "Yes," he said "and did you know that another shot I fired broke the big front window of the bank; I don't know whether they are going to send me a bill for that or not."

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BLUE GOOSE NEWS

Monthly News of American Fruit Growers Inc. *Edited by The Growers Service Department*

MATURITY TESTS AND SPRAY LAW ARE BENEFITS

The recent decision of Judge Barker in circuit court at Sebring upholding the constitutionality of the state law prohibiting the use of certain sprays to induce early maturity in citrus fruits marked an important point in Florida history, according to R. B. Woolfolk, Orlando, senior vice-president of the American Fruit Growers Inc.

With doubt of the legality of the statute now removed by its constitutionality having been upheld by both state and federal courts, both growers and shippers can be prepared to adjust operations accordingly, he says. Much credit is due Nathan Mayo, state commissioner of agriculture, in his opinion, for the vigor with which the commissioner acted in opposing technical attacks upon the law.

The operation of this new statute affecting the use of sprays, together with the working of the new state law governing tests for the maturity of fruit have, in Mr. Woolfolk's opinion, been truly beneficial to the state's citrus industry as a whole thus far this season.

The volume of very early fruit to move has been somewhat restricted but from many markets there has come evidence that the Florida citrus fruit reaching them has been satisfactory to both trade and consumers. This fruit therefore has moved out into consumption, and early market congestion has been avoided.

The joint federal-state maturity inspection service, he says, generally has been most satisfactory to Florida citrus growers and shippers; and to date has served to create a confidence in Florida fruit in northern markets which is of much value to the Florida industry.

A. B. MICHAEL BACK ON JOB

A. B. Michael, Wabasso, regional vice-president of the American Fruit Growers Inc. is back from North Carolina, and has resumed his accustomed activities upon the East Coast. He reports himself entirely fit, is certainly looking fine, and is very much on the job.

SANDLIN AT HEAD OF LAKE COUNTY GROWERS

A. R. Sandlin, long and well known in Florida citrus circles, recently became manager of Lake County Growers Inc. at Leesburg, marketing through the American Fruit Growers Inc., and is actively in charge of Lake County operations.

Mr. Sandlin, himself one of the large citrus growers of the Leesburg locality, needs no introduction to the citrus people of Lake County, nor of the state at large. In addition to his activities as a grower he was for a number of years prominent in packing and marketing operations in Lake and Marion counties.

This past Spring he terminated connection with the sales department of the Texas Citrus Fruit Growers Exchange, to which field he had been attracted through the desire of citrus growers of the Rio Grande Valley to get the benefit of the experience of a practical Florida citrus shipping man as an aid to solving some of their Texas problems.

In going to Texas, however, he did not relinquish ownership of his Lake County citrus properties. As frequently as possible he made trips back to Florida, and kept in constant touch with Florida developments.

In returning permanently to Florida, Mr. Sandlin in seeking the best marketing outlet for his own fruit chooses to market through the American Fruit Growers Inc. If in his new connection with Lake County Growers Inc. he urges the superiority of methods of the American Fruit Growers Inc. he will be preaching only what he as a grower practices. His years of citrus experience and his later opportunities for broad observation of the citrus markets have made Mr. Sandlin a strong convert to the Blue Goose trademark and AFG policies.

SPOT PICKING SHOWS ADVANTAGE IN SALES

Even though the markets have shown a willingness to absorb smaller grapefruit with perhaps greater readiness than at the same early period in previous seasons, too strong a preponderance of small size grapefruit was responsible for the market congestion which slowed up grapefruit sales just prior to the first of this month.

With the larger size grapefruit moving out into consumption quite freely there was an accumulation of small size fruit on the hands of the jobbing trade in many centers, with the result that sales were in good part blocked until the accumulated small fruit could be moved.

The movement of spot picked grapefruit in the larger sizes, however, demonstrated the underlying demand for grapefruit of good quality and size.

Porto Rico grapefruit arriving in the eastern markets in considerable quantity, plus some shipments from the Isle of Pines, has not obtained a reception which indicates any preference for the island fruit.

Indications are that Porto Rican grapefruit shipments will continue in only fair volume, with a probable cleaning up of the present crop by, or before, the first of the year.

The first week in this month probably witnessed the last heavy arrivals of California Valencias in the eastern markets. The supply of Valencias probably will hold out for a short time, but not in volume sufficient to affect materially the larger markets. The California navel movement was somewhat delayed not due to lateness in maturing, but to the quantity of Valencias held over at a time when the northern California navel movement otherwise might have started.

As this is written there is a notable strengthening in the demand for Florida oranges, plus a willingness to pay very satisfactory prices for desirable size fruit of good eat-

(Continued on page 2)

Adv.

BLUE GOOSE NEWS

OF INTEREST to the citrus growers of Florida, each month, contained in four pages of paid advertising from the

AMERICAN FRUIT GROWERS INC.
Florida Division
Sixth Floor, State Bank Bldg.
ORLANDO, FLORIDA

Adv.

BY-PRODUCTS

The opening of the new United States Department of Agriculture citrus by-products laboratory at Winter Haven is significant to the Florida industry.

That its operation ultimately shall result in finding new commercial by-products from our citrus fruits hardly can be doubted. The nature and the practical value of such future discoveries is purely conjectural; but experience teaches that wherever the light of scientific research is strongly focused there is strong likelihood of many discoveries of scientific and practical value.

If, however, the operation of this laboratory results in nothing more than the further perfection and standardization of Florida's already established citrus by-products, it is safe to say the costs of equipping and operating the laboratory will be returned many fold.

The splendid and speedy coordination of Florida citrus forces to make the new laboratory possible is a matter for congratulation to the industry of the state. Whatever differing schools of thought may exist within Florida's citrus circles, differences of opinion are not allowed to interfere with any undertaking for the acknowledged common good of the industry which may present itself. This outstanding Florida characteristic is Florida's best insurance for the continuing and ultimate prosperity of citrus growing here, which beginning with the coming of civilization to this peninsula has for four hundred years held first place in the field of agricultural and horticultural endeavor.

For Dr. Von Loeseck and the men who with him will study these Florida citrus by-products problems at their Winter Haven headquarters there is every good wish, and plentiful faith, that success shall crown their efforts in Florida's behalf.

SPOT PICKING SHOWS ADVANTAGE IN SALES

(Continued from page 1)

ing quality.

Early arrivals of Florida oranges were penalized in the markets because of greenish color, lack of eating quality, and some weakness at the stem ends of the fruit. Later arrivals, however, have been well received, with a resulting stronger tone in the markets and a widened demand. With the orderly movement of suitable fruit there are indications the markets will now be capable of absorbing Florida oranges in good volume; and that desirable quality fruit in the wanted sizes is due to command satisfactory prices.

FLORIDA TO ENTERTAIN COUNTRY'S FRUIT JOBBERS

The fruit jobbing trade of the United States, generally comprised in the membership of the National League of Commission Merchants, will head for Florida this winter, when the Fortieth Anniversary meeting of the League is scheduled to convene in Miami January 12 to 15 inclusive.

Tentative plans now being formulated by the League's officials include travel by special trains, and plans for the Eastern contingent include special stops and entertainment at Pinehurst, N. C. and Ocala on the way southward.

Following completion of the meeting there is planned a sight seeing trip through citrus Florida with various forms of local entertainment beginning at West Palm Beach and including Sebring, Highland Hammock, Frostproof, Lake Wales, the Bok Tower, Winter Haven and the Orange Festival, Florence Villa, Auburndale, Orlando, Winter Park, Clermont, Howey, Leesburg, and perhaps other stops.

The National League meeting is the great mid-winter gathering of the fruit and vegetable wholesale and jobbing trade of the country; and the attendance upon the Florida meeting should be a large one. The League is one of the oldest institutions in the perishable foodstuffs trade, dating back, as its name implies, to a time when practically all the produce business of the country was transacted by those acting as commission merchants. Its membership today includes, however, a vast number of shippers and handlers of produce who are not commission merchants in the ordinary sense. The League has an extensive membership in Florida, including the bulk of Florida citrus shippers, all of whom will extend hospitality to the out of state visitors.

GENERAL INQUIRY INTO REFRIGERATION CHARGES

Hearings in the long delayed general inquiry into refrigeration charges by the Interstate Commerce Commission are scheduled to open on the Pacific Coast on February 8. Other hearings in various sections of the country will follow. The inquiry may consume a year, perhaps two years, before findings are reached, so great is its scope.

Initiated March 12, 1928 on the Commission's own motion, no further action was taken until recently, except that in May 1928 the Commission issued a supplementary order broadening the scope of the proceedings so that, together with another inquiry pending upon the docket, a general inquiry into refrigeration charges is the result.

Since that time nothing has happened, but now the Commission revives the matter by ordering opening of hearings, beginning in Los Angeles. No dates have yet been announced for other hearings; but it is anticipated ample advance notice will be given of all proceedings to fully enable growers and shippers, together with their traffic organizations, to present their evidence.

MOBILE NOW WANTS FLORIDA CITRUS FRUITS

Authorities of Mobile county, Alabama, have given notice that on November 20, they will lift the quarantine on Florida citrus fruits. The removal of this barrier lifts the very last ban upon Florida citrus resulting from the insect menace of 1929. Action in Mobile county came as a result of considerable local agitation in which a newspaper and various local bodies played a part. The Mobile Press upon its own initiative led the fight to readmit Florida fruit to Mobile.

"Florida citrus fruit cannot be

Orange Juice 5c Per Glass

Florida Orange Juice at FIVE CENTS per glass at soda fountains within the State of Florida proves sufficiently popular with the public to displace the bulk of the sales of other five cent beverages. That has proven to be the experience at fountains which recently have featured FIVE CENT orange juice.

This season good oranges for juice purposes are within reach of every Florida fountain at prices which will make a good profit upon a six-ounce glass of orange juice retailing at five cents.

Florida's winter visitors want orange juice.

Floridians want orange juice.

A lot of usable money can be kept at home.

Progressive fountain proprietors can make money.

Orange Juice 5c Per Glass

Ask the soda fountain man of your acquaintance about it.

bought in Mobile county," said the Mobile Press editorially in its issue of October 10.

"Florida fruit is allowed on every other market in the United States, except those of Mobile county, Florida's close neighbor," it continued.

"Florida grapefruit and Florida orange juice may be had at breakfast tables in any community, save those in Mobile county.

"The cheaper and better fruits of Florida may be purchased by housewives marketing anywhere, save in Mobile county.

"Mobile county has placed a ban on Florida fruit.

"It is claimed the ban is to prevent fruit fly infestation, yet state and federal agricultural experts have given Florida a clean bill of health.

"Mobile county has no embargo against Cuban fruit or fruit from the Isle of Pines.

"Obviously there is a motive which is actuating those in power to ban Florida fruit here.

"What that motive may be can be ascertained. It is the duty of the civic clubs of Mobile and the Mobile Chamber of Comerce to investigate the Florida-Mobile county situation and find what lies at the bottom of this embargo.

"Mobile buyers and consumers want Florida fruit. Government experts have announced that no danger is anticipated from the use of Florida fruit.

"Florida growers trade with Mobile merchants. Mobile seeks the friendship of Florida yet it allows a senseless and unreasonable ban to stand against Florida products.

"Mobile homes need Florida fruit —a better and more satisfactory fruit than can be obtained from any other market.

"The Mobile Press calls upon our Chamber of Commerce and our civic clubs to ascertain the reason why."

LEADS THE WORLD IN ORANGE PRODUCTION

The world's largest producer of oranges is the United States of America. Spain, long the premier orange producing country, must take a back seat now for Uncle Sam.

For the five year period ending in 1929-30 the United States produced an annual average of 38,500,000 boxes of oranges. The average orange production of Spain for the same five year period was 36,700,000 boxes annually.

Australia and Algeria produce approximately 2,000,000 boxes each in an average year. South African production is below this figure, and is not greatly increasing.

Japan produces more oranges than Italy in a normal year. Their average production for the five year period named above was 10,000,000 boxes annually for Japan; and 8,560,000 boxes for Italy. The great bulk of the world's orange crop comes from these eight countries.

CITRUS PLANTINGS LESS IN ARIZONA AREA

Last year something less than 4,500 acres were set to citrus trees in Arizona. Probably not to exceed 3,500 acres of citrus plantings will be made this year in that state.

According to the Arizona Producer the difficulties which have beset other forms of agriculture have been responsible for the turning of attention more seriously to citrus; but the available supply of nursery stock and other considerations are operating to keep citrus plantings down.

Adv.

Suitable Fruit?

What is suitable fruit?

As a matter of fact fruit that is suitable for Doeville may not be at all suitable for Roeville. Smithboro and Jonestown may prefer precisely the same sort of fruit, yet Brownville simply won't have it.

Public buying habits are funny like that; and fruit jobbers are governed by them. They must purchase what they can in turn sell to their retail trade, and retailers calculate their purchases to meet the known preferences of the consumers they serve.

Hence some jobbers seek wholly bright fruit. Some do not mind a considerable percentage of goldens and russets, but cannot use profitably a larger proportion. Some do not care how large is the proportion of russets.

Sizes always cut an important figure in citrus sales. Sizes not only govern the retail price per unit, but otherwise play an important part in the fruit's ultimate acceptance or rejection by consumers.

The wider the distribution, the greater number of towns open to direct sales, the greater the opportunity to place carloads of fruit where they will obtain fullest value. Improper selection of the market place not only sacrifices part of the value of a shipment, but may generally depress prices in that community.

This organization not only maintains the widest flung sales outlets of any shipping Florida citrus fruit; but commands the specialized knowledge which makes possible discriminating selection of market places for its offerings.

American Fruit Growers Inc.

Florida Division
Orlando, Florida

Adv.

IMPRESSIONS

(Continued from page 12)

Seeing Hon. Herbert J. Drane perform, and talking to him close up, we marvel at how well he carries his age, and how little he shows it physically, and not at all mentally. Coming home we stopped our car in Longwood at the crossing of the Atlantic Coast Line railroad (first the South Florida Railroad, later the Plant System) and communed with ourself: "You may feel old some mornings, you mutt, but you are still a mere kid; remember Herbert J. Drane originally built this railroad through the wilderness while you were a little youngster."

Some of these citrus birds get better looking too as they get older. For instance there's Earl Haskins of Winter Haven and Louis A. Hakes of Orlando, their graying hair makes 'em quite distingue, so to speak. Maybe there's yet hope for some of us other fellows.

Lucky in luncheon mates. We drew a seat along with Fred W. Davis, general salesmanager of the Exchange, Harold Crews of that organization, and John B. Rust, manager of the Polk county sub-exchange. Then Bruce Floyd, manager of the Florence Association filled in at a single-seater alongside and made it a five-some. Good company makes good eats go better.

Gotta hand it to that Winter Haven bunch of go-getters again. Judge Allen Walker, Jack Guthrie, John F. May, Leslie Anderson, John Snively, A. M. (Bunny) Tilden, Jay Stull, George Sampson. R. S. Abernethy, Russell Haas, J. Walker Pope, Earl Haskins et al, and Al's brother, sure know how to put things over with a bang; and use their knowledge.

J. G. Grossenbacher of Apopka was right at home in the gathering. He's got enough scientific degrees to match any of the U. S. Department of Agriculture's sharks; and talks the same language. In fact, he is one of a very few examples of the successfully reformed government scientific worker.

And Lem Woods of Tampa was out for the gathering. He hasn't been attending many such this last few years. He came with C. T. Melvin, general manager of the Gulf Fertilizer Co., and seemed to enjoy meeting a lot of old friends; and we, for one, enjoyed seeing him. It seemed like old times in horticultural circles.

C. C. Commander was very much present. He is getting fat and sassy. Used to be all shriveled up and half-starved like Marvin Walker or ourself; could have passed for a scribe easily. His mind isn't the only thing which has broadened in recent years.

And looking over the gathering we would nominate: For most distinguished appearance, Joshua C. Chase; for the hungriest appearance, Seth Walker; for the bright spot of the gathering (hat removed), H. Harold Hume; for the heaviest thinker C. W. (Joe) Lyons; for the world's best listener, Robert B. Woolfolk.

Pausing in Orlando on the way home from the Winter Haven gathering, learned that Pinky Williams of the American Fruit Growers had taken advantage of the diversion of attention that afternoon to get married. Yes sir, C. N. Williams is now a married man, though it wasn't so much of a surprise to his close friends. For the past few months he had hardly been what one would call normal. Absent minded, always clean shaven, and other signs.

However, the time of the event had been kept a deep, dark secret, and thereby hangs the tale of a practical joke which went wrong. About three o'clock on that fateful afternoon a gentleman called up the Orlando offices of the American Fruit Growers. "I am Mr. Williams' cousin," he impressively told the telephone operator; "he is being married this afternoon. Right following the ceremony there will be a special reception here at the home of the bride's parents for officers and employees of the American Fruit Growers. Now Mr. Williams knows it will be impossible for all of you in Orlando to attend; that some few must stay to keep the offices open and things going; but he is very anxious that all who can will come."

Forthwith there was excitement. The word was passed about; there was a conference. Mr. Woolfolk being away at Winter Haven this thing had to be decided by popular vote.

Meantime the telephone operator got to worrying to herself. "Now did he say three-fifteen or eight-fifteen; three and eight sound a lot alike over the wire?"

So, to make sure, she called the home of the bride's parents. The bride's mother answered: "Well now they were married a bit ago; and they have just left; but really this is the first I had heard of any reception."

So the practical joke was a dud; and how the joker must have been disappointed. Thank goodness we are above suspicion of being the joker; at any rate we are glad we were in Winter Haven and have a hundred witnesses to our abili.

In California recently Harold E. Wahlberg, farm advisor for Orange County, told a gathering that less than five per cent of the citrus growers in California keep books on their operations; and that only a small portion of those who do keep books have them in shape so their costs of

Write, wire or phone us at our expense and a representative will call on you.

production may be analyzed. And we had thought it was Florida citrus growers solely who thus are so lax. What percentage of Florida growers keep accurate cost and sales records? Your guess is as good as ours.

That reminds us that in journeying about we see some groves where to our cracker mind (remember we are no blooming horticulturist) trouble is about due. Citrus trees are long-lived, somewhat sluggish in their response to lack of feeding or wrong feeding. That fools some persons, for a time; but the response of the trees is sure if slow. Recently, due to growers' laudable efforts toward economy, there have been changes in fertilization practices and formulae in many groves. And in some of the groves which we have noted the trees are, in our opinion, beginning to express dissatisfaction. Enthusiastic salesmanship can conjure fine fruit out of a bag, like rabbits out of a silk hat, but citrus trees are realists.

And speaking of economy, why the tissue wraps today on citrus fruits? Originally tissue wraps served to identify the fruit, they furnished the only way of getting the trademark or brand before trade and consumers. Now, with the growth of electrical fruit marking, the only good purpose which tissue wraps serve is to conceal, for a time, blemishes on the fruit. There is plentiful proof that unwrapped citrus fruits travel better, and are less subject to decay, than wrapped fruit.

Fellow with a big truck bearing a foreign license stops at a filling station near us for oil and water. No gasoline, thanks. And here is a, to us, new wrinkle. Built in underneath the truck body a gasoline reserve tank with capacity for 125 gallons. All filled up, too, with fourteen-cent gasoline from a neighboring state with no gasoline tax. Bootlegging now having been developed into a fine art proves capable of extension into other fields besides that of Z grade cooking whiskey.

CITRUS COMMENTS
(Continued from page 11)

plus boxes produced plus or minus variety fertilized, was sometimes confusing, often impractical, and so unscientific. Furthermore, we have already been varying this amount per tree on an estimated need as we came to undersized or oversized trees. This new system was checked with the practice of more than a hundred successful grove operators this summer and found to correspond to their practices.

"In this connection too much stress cannot be placed on this statement: 'The fertilizer should be applied evenly over the soil surface, as far as the roots extend'.

"The three programs outlined should made it simple for anyone to figure his fertilizing schedule, whether he be an advocate of the use of mixed goods or materials.

"It is my understanding that the committee does not claim that this is the last word on fertilizing groves, and that special conditions will arise demanding special treatments."

FEDERAL LABORATORY IN TEXAS TO STUDY CITRUS BY-PRODUCTS

Citrus fruit growers of Texas, like those of California and Florida, will soon receive the practical assistance of the U. S. Department of Agriculture in solving their problems of utilization of citrus-fruit culls and by-products, Dr. Henry G. Knight, Chief of the Bureau of Chemistry and Soils, announced recently. Doctor Knight said that the new citrus laboratory of the bureau, for which funds were appropriated by the last Congress, will be established in the citrus-growing territory of the Rio Grande Valley at Weslaco, Tex., on the State-owned land of the Texas State Experiment Station.

The selection of a site on the agricultural experiment station grounds at Weslaco was made upon recommendation of Dr. F. C. Blanck, in charge of the food research division of the Bureau of Chemistry and Soils, and Mr. E. M. Chace, of the buearu's fruit and vegetable laboratory at Los Angeles, Calif., and with the approval of Director A. B. Conner of the Texas Agricultural Experiment Station at College Station.

The Weslaco and Mercedes, Tex., chambers of commerce have agreed to erect a suitable building for the citrus work of the bureau. In recommending this site for the bureau's by-product work with citrus fruits, the department specialists said: "We feel that the selection of Weslaco is absolutely logical, and that it offers special advantages, because of the effective cooperation with the State experiment station which it makes possible and because our work at Weslaco will be located in the center of the citrus-growing territory of Texas."

Director Conner of the Texas Agricultural Experiment Station, in commenting on the establishment of the Federal work in utilization of citrus by-products at Weslaco, says, "The location of this proposed laboratory at the substation ought to be mutually advantageous to agencies working in behalf of the citrus industry. With the concentration of both Federal and State activities at this one station, it will receive increased recognition as a center of research for the Texas citrus-producing industry."

In writing advertisers please mention The Citrus Industry.

CLEAN TREES & CLEAN FRUIT

...follows the use of ORTHO KLEENUP for citrus pest control. Has been widely used in Florida with great success. Very economical too. Write for full information.

CALIFORNIA SPRAY-CHEMICAL CORP.
61 W. Jefferson St.
Orlando, Florida

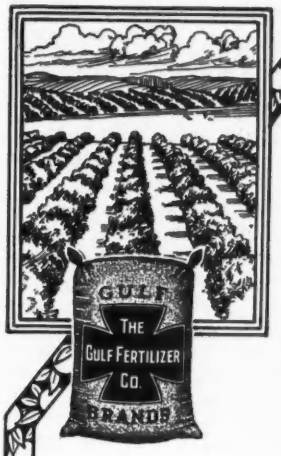
KLEENUP
a proven oil spray for citrus pests

ORTHO
SCIENTIFIC PEST CONTROL

CITRUS NURSERY NEWS

We have for sale several hundred thousand Orange and Grapefruit trees of staple varieties on sour orange roots. Caliper ½ to 3½ inches. Fine stock. Must be sold. Write to us for prices.

Lake Nursery Company
Leesburg, Florida



YOUR PROFITS

You are probably not much interested in "our factory", or "our this", or "our that"————————**BUT**—you are vitally interested in what your net profits will be. You cannot do very much individually toward controlling market prices of agricultural products, but you can successfully regulate the quality. Cheap fertilizer may produce fair crops for a year or two by drawing on the reserve fertility in the soil. The wise Grower is the one who feeds his crops so as to add to the quality and quantity—producing capacity of his land.

GULF BRANDS--the STANDARD BRANDS--PLUS, coupled with the Service which is yours for the asking, will help you make profits if any are to be made.

The GULF FERTILIZER CO.
TAMPA, FLORIDA

Warehouses: Winter Haven, Lake Wales, Bradenton, Winter Garden
Stocks at other convenient points throughout the state

THE FOOD VALUE OF ORANGES AND GRAPEFRUIT

(Continued from page 9.)

protein in orange and grapefruit as given in food composition tables is about 0.5 per cent, it must be remembered that this figure does not represent real protein. It is simply the nitrogen content multiplied by the factor 6.25, and, therefore, includes all the nitrogenous compounds present in the fruit. The actual amount of protein present must be considerably less. With such a small amount of protein present, oranges and grapefruit play a minor role as substances in the diet which contribute to the growth and maintenance of tissue proteins in the body. On the other hand, it is possible that the small quantities of protein found in such products as fruit may be of such a nature as to have a significance in nutrition in some way as yet unknown. This view finds some support in the findings of Smith, (31) who isolated a protein from orange pulp which is distinguished from any of the conventional classes of proteins by its unusual properties.

Utilization of Citrus Wastes

Experiments have been conducted to ascertain the value of orange and grapefruit refuse as a feed for domestic animals. At the request of the Agricultural Committee of the National Research Council, the University of Maryland conducted experiments on the effect of cooked citrus rinds on hogs. (32)

The University of California Experiment Station (33) found that orange residue is readily digestible and "should have a feeding value approximating that of barley, dried beet pulp, and other feeds of a similar nature".

Experiments on feeding dried grapefruit residue and orange residue to dairy cattle have yielded conflicting results. (34, 35) The material should have a dried value as a source of carbohydrates. The process used in its preparation probably destroys most of the vitamin contained in the original material.

Investigations on methods of drying, or reducing citrus waste to a concentrated, stable and marketable form, have been conducted by the Laboratory of Fruit and Vegetable Chemistry, Bureau of Chemistry and Soils, U. S. Department of Agriculture. (36)

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Crestview, Fla. — Nearly 4,000 pounds of vegetables have been gathered from the one-twentieth acre garden of Ottie Lee Bass, local 4-H club girl, reports Miss Bertha Henry, home demonstration agent. Ottie Lee has canned 816 quarts from the garden.

THE NEW
Standard Cover Crop Cutter

Nothing so sensational of this nature has ever before been placed on the market. It cleanly removes your cover crop and will cover 40 acres both ways in a single day . . . a rotary cutter does the work . . . no sharpening is required and the heavier the crop the better it works. It is ideal for CROTALARIA as it chops the heaviest cover crops into short lengths making it quickly available as humus. With this machine you can let your cover crop stand from four to six weeks longer than usual. . . . One customer disposed of his three mowers after having our machine demonstrated . . . you too, will want one if you appreciate true economy in your grove operation. Write us for prices and particulars, also folder on Peacock Patented Grove Irrigation Valve.

Peacock Brothers
Lakeland -:- Florida

DEDICATE LABORATORY FOR CITRUS BY-PRODUCTS

(Continued from page 5.)

were present. It was accepted formally by Dr. Henry C. Knight, chief of the Bureau of Chemistry and Soils of the Department, under which auspices it will be operated.

He was followed by Dr. W. W. Skinner, assistant chief of that bureau, who outlined the purposes for which the laboratory will be operated, and told something of the work which is being done in the effort to couple new scientific discoveries with the practical purposes of industry. This particular laboratory, Dr. Skinner said, will attempt to "bridge the gap" between constantly occurring discoveries in pure scientific research and the needs of the citrus industry as relates to by-products. The laboratory will study methods of canning, dehydration and cold storage preservation of orange and grapefruit juices; also preservation of the delicate orange flavor in orange products; the utilization of juice and pulp from cull oranges and grapefruit; the utilization of dried pulp for cattle feed, fertilizer and other purposes. It will also study the production and utilization of orange oil and grapefruit oil, and of pectin and naringin obtained from the skins and pulp. This was told by Dr. Skinner, and Dr. F. C. Blanck, head of the division of food research, who also spoke upon behalf of the Department of Agriculture.

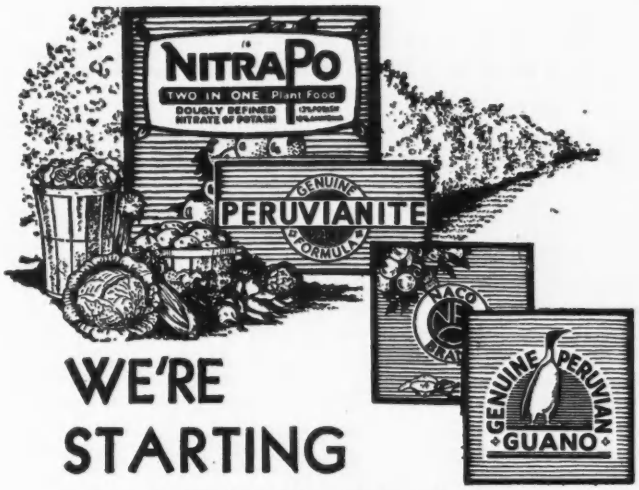
Brief addresses were made by E. L. Wirt, chairman of the board of directors of the Florida Citrus Exchange, A. M. Tilden, president of the Florida Citrus Growers Clearing House Association, Nathan Mayo, state commissioner of agriculture, Senator Park M. Trammell, and Fred W. Pope of Lakeland, whose personal underwriting of the necessary finances aided much in making possible obtaining the laboratory for the Florida industry.

As the guest of honor at the luncheon and the subsequent inspection of the plant, Hon. Arthur M. Hyde, Secretary of Agriculture, was the principal speaker of the occasion:

"There was a time," the Secretary said, "when production was a problem in United States agriculture, but that time has passed. Now it is an economic problem from the planting of the crop to the ultimate consumer.

"We must find some means to achieve the balance between production and the markets. We must be mindful of foreign competition. It is important that every citrus grower

(Continued on page 24.)



WE'RE STARTING A CONTEST FOR NACO USERS

WE want to know what you think about NACO Fertilizers and NACO Products . . . we want you to tell us in your own words, in the language of the grower, about the results you have had and why you think NACO is better than other fertilizers.

So we're going to hold a contest for NACO users. Every citrus or truck grower who uses NACO Fertilizers in large or small amounts for better crops is eligible to compete . . . all you have to do is write a letter telling about your experiences with NACO Fertilizers, NitraPo, Genuine Peruvian Guano, and PERUVIANITE Formulas.

Ten worthwhile prizes will be awarded for the best letters. Read the rules of the contest carefully . . . then get busy right away and write your letter. There's a time limit on the contest. Here are the rules:

. . . and here are the

PRIZES

FIRST: . . . $100.00

SECOND: . $50.00

THIRD: . . . $25.00

FOURTH TO TENTH

A bag of NitraPo or Peruvianite 9-9-9 to each winner.

Perhaps you do not use NACO Fertilizers, but your neighbor does . . . Call this contest to his attention . . . his letter may win a prize!

1. Only users of NACO Fertilizers and Products shall be eligible. "Users" includes caretakers and their families.

2. Letters shall not be more than 300 words in length.

3. Letters may be written by typewriter or in longhand on one side of the paper only.

4. This contest shall end on December 10th. All letters must be postmarked not later than midnight of that date.

5. Letters shall be judged on the basis of results and experience with NACO Fertilizers and Products, not on grammar, spelling or punctuation.

6. One (or more) of the winning letters will appear each month in NACO advertising in agricultural publications.

7. Winners will be chosen and prizes awarded within 30 days after the close of the contest.

8. Attach this advertisement to your letter.

In case of a tie, prizes of identical value will be awarded.

NITRATE AGENCIES COMPANY
1401-1407 LYNCH BUILDING
JACKSONVILLE FLORIDA

Sales Representatives of Exchange Meet

Sales representatives of the Florida Citrus Exchange, in the state met in Tampa recently to report on their territorities and discuss sales and advertising plans with Exchange executives, were unanimous in the opinion that the future holds fine opportunities for the citrus industry, that there is no real over-production problem yet and that the depression is soon to pass into history.

The division and district managers and other representatives of the cooperative were brought to Florida to make personal reports and direct contact with the growers, directors and managers of the organization. In the interchange of views, the growers and others in Florida received much valuable information about the markets while the representatives received a valuable insight into the citrus industry, had a better understanding of the problems here and will, it is believed, bring the trade and the industry closer in understanding of each other.

Two special sessions were held in Tampa, the first bringing the representatives and the department heads of the Exchange in conference on sales and advertising plans, and the second giving the growers, directors and managers the opportunity to meet with the visitors. The latter meeting filled the asembly room of the Exchange in the Tampa office to capacity, more than 200 attending.

The representatives believe that a distinct improvement in the markets generally will be noticed next year. It was the opinion of Errol M. Zorn, manager of the important Eastern division which includes New York, that the bettered situation will continue for many years. His view was supported by the other "key" division managers present, Temple Allen, Jr., Boston, of the New England division; S. W. Teague, Chicago, of the Mid-West division, and William Wert of the Cincinnati division.

Though interested in the suggestions and plans on various economies proposed, the sales representatives of the principal volume markets advised that the public is sold on high standards of pack as well as grades and that in normal times will demand these standards. They warned that some of the proposals which the growers and others are inclined to advocate will penalize the fruits in the markets more than the growers will save from their use. This particularly applies, according to the comment, to the Eastern New England and Central areas.

Opportunity was given the representatives to visit the various citrus sections with the arrangements allowing each to see two or more. Few had ever been in Florida before and were keenly interested and attracted by the citrus and other developments shown them.

Besides the division managers, the following district managers and representatives attended: O. H. Munro, Albany, N. Y.; E. P. March, Scranton, Pa.; H. H. Kemper, Columbus, O.; T. Mulkeen, Indianapolis, Ind.; W. H. Moody, Harrisburg, Pa.; E. L. Worthington, Baltimore, Md.; M. M. Noteware, Buffalo, N. Y. R. R. McNamara, Cleveland, O.; H. C. MacClaren, Detroit, Mich.; R. E. McCann, Philadelphia, Pa.; J. Nassan, Pittsburgh, Pa.; E. J. Brown, Rochester, N. Y.; E. S. Cooper, St. Louis, Mo.; C. V. Sylveria, Washington, D. C.; N. T. Collette, Minneapolis, Minn.; S. B. Davis, Grand Rapids, Mich.; and C. L. Blomely, Peoria, Ill.

A typical group of the sales representatives of the Exchange in one of the finer grapefruit groves. Left to right, District Manager J. Nassan, Pittsburgh, Pa.; R. E. McCann, Philadelphia; C. V. Sylveria, Washington, D. C.; O. H. Munro, Albany, N. Y.; E. S. Cooper, St. Louis; T. Mulkeen, Indianapolis; E. L. Worthington, Baltimore.

MUCK IN DRIED PONDS MAKES GOOD FERTILIZER

Gainesville, Fla.—It's a long dry spell that brings nobody any good.

With ponds over Florida low as a result of the continued dry weather, muck on their bottoms, particularly around the edges, is becoming accessible. Dr. R. M. Barnette, associate chemist with the Florida Experiment Station, suggests that citrus growers, bulb growers, and others haul this muck onto nearby groves and fields as fertilizer. It usually contains from 2 to 3 percent nitrogen, when dry, he says.

A slightly acid condition is usually its greatest drawback, but this is not often enough to seriously affect the land to which it is applied. Its value does not justify hauling it long distances, he says.

SAUSAGE CANNED

Inverness, Fla. — Two hundred number 2 cans of sausage were recently canned by a farmer near here from the trimmings from 12 small hogs he had killed for storage, reports Mrs. Elizabeth Moore, home demonstration agent.

The Japanese government purchased nearly 4,000,000 bushels of rice from Japanese growers recently.

NEW CITRUS DISEASE BULLETIN PUBLISHED EXPERIMENT STATION

Gainesville, Fla. A new and complete bulletin about citrus diseases has just been published by the Florida Experiment Station here. It is number 229, and free copies are available.

All of the diseases that are likely to be found in Florida citrus groves are discussed in this 216-page bulletin. More than 100 pictures of the diseases discussed are shown. It also contains a complete spray program for both diseases and insects.

The authors aree Dr. A. S. Rhoads associate plant pathologist, and E. F. DeBusk, extension citrus pathologist.

COST OF RAISING BEEF IN FLORIDA ONE-THIRD LESS THAN IN NORTH

Gainesville, Fla.—Beef cattle can be raised in Florida for one-third less than in the cooler states, George Dyson, general manager of the Dyson and Rodewald Ranch, Rushville, Ill., stated during a recent visit to the College of Agriculture herd here. Foundation stock for the college herd was purchased from this nationally known ranch two years ago.

"Here the farmer has a plentiful supply of natural pasture during practically the entire year, and he is not confronted with the difficult and expensive housing problem that makes cattle-raising in the northern states expensive", he said.

STINK BUGS GO TO CITRUS AS DROUTH HURTS COVER CROP

Gainesville, Fla.—The stink bug situation is becoming serious in many citrus groves because much dry weather has caused them to leave the cover crop and attack the fruit, explains J. R. Watson, entomologist with the Florida Experiment Station.

Mowing the cover crop now should only make matters worse. The bugs prefer the cover crop blooms to citrus, but over most of the citrus belt Crotalaria striata has stopped blooming and in many cases has dropped its pods. In such cases the bugs will be forced to go to the citrus for food. They will suck the juice from the ripening fruit and cause it to fall quickly. Even if the fruit is ripe, molds and rots are likely to set in where the fruit is punctured and prevent it from going to market.

At this time of the year the bugs prefer Satsumas, Parson Browns, Tangerines, and Pineapple oranges. It is unusual for them to do much damage to Valencias and grapefruit.

VEGETABLES NOT DAMAGED

Stuart, Fla. — Where vegetable growers in Martin County have properly sprayed and dusted so far this season there has been very little damage from insects and diseases, reports C. P. Heuck, county agent.

They Buy—
By The Eye

Give More And You Get More

It's the FINISH that counts—a better polish influences a better price. The new Skinner All-Steel Polisher has set up a new standard of polishing efficiency in Florida houses where they are in use. It is the finest polisher we have yet produced being a combination in one machine of a quarter century's experience in polisher building to meet Florida conditions. It will handle all kinds of Florida fruit—round or flat—polishing both stem and blossom ends.

Construction is all-steel throughout insuring durability. Moving parts are kept in alignment and always run in balance. High speed brushes are mounted on ball bearings, gear boxes are bronze bushed and run in oil, main bearings roller.

Improve the appearance of your pack by using one of these modern polishers. The market buys by the eye—it's the FINISH that counts.

FLORIDA CITRUS MACHINERY COMPANY

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DEDICATE LABORATORY FOR CITRUS BY-PRODUCTS

(Continued from page 21.)

know the nature of foreign citrus competition.

"Prosperity will only come from a profit left on the farm, not larger production. Shotgun control of production, as was tried at Oklahoma oil wells, won't achieve the desired result. But cooperation of the Florida growers with Florida organizations, so the farmer may control marketing of the crop, is the practical solution of the problem facing the citrus grower of the state and the only way a profit can be left on the farm."

A national council of able men to regulate production was suggested by Secretary Hyde as a means of further aiding the grower. He cited the federal farm board and the federal marketing act as two things which can help bring about new prosperity to the grower if the grower will get together with them.

Concluding, the secretary said the "new citrus laboratory will seek means to widen the citrus market and to find greater uses for citrus juices. We will expand the laboratory to keep pace with production."

Following the various addresses adjournment was made to the new laboratory in the south part of Winter Haven and a reception was held there by Department of Agriculture officials, and an inspection made of the plant. Dr. Von Loeseck of the Bureau of Chemistry and Soils, who will be in charge of the laboratory's operations, together with his assistants, was kept busy furnishing information to the visitors. Citrus juices and cakes were served.

Afterward Secretary Hyde went upon a visit to the new packing house of the Florence Citrus Growers Association, and for a trip through Polk county groves.

Among the invited guests were: R. S. Abnerthy, Winter Haven; W. S. Allen, Davenport; Frank Kay Anderson, Altamonte Springs; L. P. Anderson, Winter Haven; George Andrews, Winter Haven; Dr. E. C. Aurin, Fort Ogden; G. B. Aycrigg, Winter Haven; Mary E. Adkins, Winter Haven; Janet Armstrong, Winter Haven; C. K. Balfour.

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H. P. Traup, W. O. Talbott, John S. Taylor, J. J. Taylor, R. K. Thompson, C. H. Thompson, Winter Haven; J. B. Thornhill, Eagle Lake; H. A. Tilden, Winter Haven; A. R. Trafford, Cocoa; Hon. Park Trammell, Washington; W. B. Teerhune, Orlando; Dr. Von Loeseck, Washington

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BULLETIN EXPLAINS APPROVED INSECT CONTROL MEASURES

No disarmament is permissible in the war on insects, a bulletin on insecticides just issued by the U. S. Department of Agriculture indicates. It explains how fruit growers must fight some insects by feeding them poison, others by actually hitting them with poison spray to control them, and how it is sometimes necessary to dig a third group of insects out of their hiding places in order to destroy them.

The bulletin is a revision of Farmers' Bulletin 908-F, published 13 years ago, and is entitled, "Insecticides, Equipment, and Methods for Controlling Orchard Insect Pests". It is Farmers' Bulletin 1666-F and is a complete "battle" guide for the orchardist in his fight against the insects.

It describes the insecticides which are now most commonly used against orchard pests, and the best methods for applying the poisons and the proper time for the spraying.

An important part of the publication discusses spraying and dusting outfits for both large and small operations, as well as spraying accessories.

The bulletin gives information on standard spray materials and their combinations. A spray dilution table for ready reference will prove valuable to the fruit grower. Some of the more important fruit insects and suggested control treatments are also discussed in the bulletin.

Copies of Farmers' Bulletin 1666-F may be obtained free by writing to the Office of Information, U. S. Department of Agriculture, Washington, D. C.

PLANTING COVER CROPS

Marianna, Fla.—More than 40,000 pounds of winter cover crops seed have been bought by the farmers of Jackson County this fall and will be planted as soon as there is sufficient rain, reports Sam Rountree, county agent.

"The most serious thing that can happen to a man is to forget how to play," has been well said by Cy Adams, an Arkansa "farmer."

Statement of the Owenrship, Management, Circulation, Etc., Required by the Act of August 24, 1912, of The Citrus Industry, Published monthly at Tampa, Florida, for October 1, 1931.

State of Florida.
County of Hillsborough.

Before me, a Notary Public, in and for the state and county aforesaid, personally appeared S. L. Frisbie, who, having been duly sworn according to law, deposes and says that he is the editor of The Citrus Industry, and that the following is to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 433 Postal Laws and Regulations, printed on the reverse side of this form, towit:

1—That the names and addresses of the publisher, editor managing editor, and business manager are:
Editor, S. L. Frisbie, Tampa, Fla.
Business Manager, S. L. Frisbie, Tampa, Fla.

2—That the owners are:
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3—That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are:
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Sworn to and subscribed before me this 20th day of October, 1931.
W. F. REEDER,
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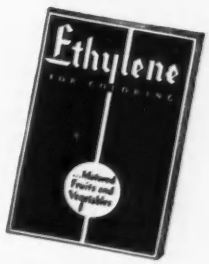

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DISEASE IN PECAN ORCHARDS HAS GAINED IN LAST DECADE

Diseases of pecans in the Southern States, which specialists 10 years ago hoped might be kept a minor factor in the industry, have instead, become of growing economic importance each year.

Although it was believed at that time that careful selection of suitable orchard sites, the planting of disease-resistant varieties, and proper orchard care would reduce disease damage to a minimum, this has not come about, says Farmers' Bulletin 1672-F, Diseases of Pecans in the Southern States. The bulletin has just been published by the U. S. Department of Agriculture. It supersedes Farmers' Bulletin 1129-F, Diseases of Southern Pecans.

Instead, with the possible exception of rosette, the earlier known pecan diseases attack the trees more severely than formerly. More varieties are susceptible to scab and the scab is widely scattered. Other little known diseases of a decade ago have now become of major importance. Most of the pecan diseases also attack hickory trees.

The bulletin gives instructions for preparing and applying sprays to combat certain of the pecan diseases. It lists and discusses diseases caused by specific organisms and by environment. Those caused by specific organisms are: scab, leaf blotch, brown leaf spot, nursery blight, crown gall, powdery mildew, western sooty spot, Gnomonia leaf spot, downy spot and wood rots. Those caused by environment are: rosette, sand burn, little leaf, winter injury and edema.

THE CITRUS FRUIT SITUATION IN THE UNION OF SOUTH AFRICA

(Continued from page 7.)

seas for Valencia oranges shipped from Southern Rhodesia during 1930 was $3.90 per box as compared with $3.80 for all varieties of oranges. This was barely profitable. The prices received for South African fruit, however, were from 50 cents to 75 cents per box better than those received by Brazilian shippers. On the other hand, oranges from California were reported to be selling within 25 cents to 50 cents of the best prices for South African oranges. In view of the low net returns on citrus fruit, it is probable that new plantings will be very light.

When writing advertisers please mention The Citrus Industry.

"Willie, you've been a naughty boy go to the vibrator and give yourself a good shaking."—Capper's Mag.

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MISCELLANEOUS

DUSTER — Niagara, Air-Cooled engine Steel truck-mounted. Nearly new. Half price. Samuel Kidder, Monticello, Fla.

SEEDS—ROUGH LEMON, SOUR ORANGE, CLEOPATRA. Pure, fresh, good germination. Also seedlings lineout size. De Soto Nurseries, DeSoto City, Fla.

FANCY ABAKKA pineapple plants. R. A. Saeger. Ankona, Florida.

HIGH BLOOD PRESSURE easily, inexpensively overcome, without drugs. Send address. Dr. J. B. Stokes, Mohawk, Fla.

SCENIC HIGHWAY NURSERIES has a large stock of early and late grapefruit and oranges. One, two and three year buds. This nursery has been operated since 1883 by G. H. Gibbons, Waverly, Fla.

RAISE PIGEONS—Profit and pleasure. Illustrated descriptive catalogue postage six cents. Vrana Farms, Box 314a, Clayton, Missouri.

ORANGE PACKERS ATTENTION — Two chemical transparent flexible orange coating processes for sale; royalty or license basis. Patent pending. Dr. C. V. Berry, 251 West 111th Street, New York City.

PUREBRED PULLETS FOR SALE—White Leghorns and Anconas ready to ship. Barred Rocks and R. I. Reds shortly. Several hundred yearling White Leghorn hens now laying 70%. Write or wire for prices. C. A. Norman, Dr. 1440, Knoxville, Tenn.

LAREDO SOY BEANS, considered free from nematode, excellent for hay and soil improvement. Write the Baldwin County Seed Growers Association, Loxley, Alabama, for prices.

WANTED—To hear from owner of land for sale. O. Hawley, Baldwin, Wis.

SATSUMA BUDWOOD from Bearing Trees. Hills Fruit Farm, Panama City, Fla.

WANTED—To hear from owner having good farm for sale. Cash price, particulars, John Black, Chippewa Falls, Wisconsin.

SEED—Rough lemon, sour orange, cleopatra. New crop from type true parent trees. Also thrifty seedlings. DeSoto Nurseries, DeSoto City, Florida.

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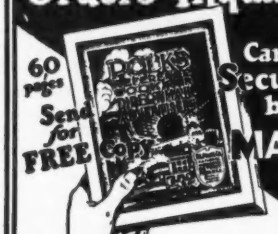

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